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Environmental Compliance Guide

Guidance Manual For Department of Energy Compliance With The Fish and Wildlife Coordination Act

July 1982

U.S. Department of Energy
Office of Environmental Protection,
Safety, and Emergency Preparedness
Office of Environment, Safety, and Health
Office of Environmental Compliance

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Environmental Compliance Guide

Guidance Manual For Department of Energy Compliance With The Fish and Wildlife Coordination Act

July 1982

Preface

The information contained in this document has been prepared to assist the U.S. Department of Energy in complying with the Fish and Wildlife Coordination Act (Pub. L. 85-624; 16 U.S.C. 661 et seq.). The manual does not add new requirements nor does it alter existing requirements under the Fish and Wildlife Coordination Act. Rather, the manual is intended to be advisory and to present guidance and information which should assist DOE compliance efforts. Supplements to this guidance manual will be issued if new regulations are promulgated or amendments to the Act are implemented.

Acknowledgments

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Abstract

This manual provides guidance for Department of Energy (DOE) officials who are responsible for complying with the Fish and Wildlife Coordination Act (FWCA). The FWCA requires that consideration be given to the conservation of fish and wildlife resources during the development of any DOE projects that affect water resources directly or indirectly. Early in project planning, DOE must cooperate with state and federal wildlife agencies in assessing project impacts to fish and wildlife. The FWCA directs wildlife agencies to make recommendations for mitigation of these impacts and requires DOE to plan its projects in such a way that equal weight is given to wildlife conservation and other project benefits.

Glossary of Acronyms

CEQ - Council on Environmental Quality

COE - U.S. Army Corps of Engineers

DOC - U.S. Department of Commerce

DOE - U.S. Department of Energy

DOI - U.S. Department of the Interior

EIS - Environmental Impact Statement

EPA - U.S. Environmental Protection Agency

ES - Evaluation species, used in HEP

ESA - Endangered Species Act

FWCA - Fish and Wildlife Coordination Act

FWS - U.S. Fish and Wildlife Service

GAO - General Accounting Office

HEP - Habitat Evaluation Procedures

HSI - Habitat suitability index

MOA - Memorandum of Agreement

NEPA - National Environmental Policy Act

NMFS - National Marine Fisheries Service

NPDES - National Pollutant Discharge Elimination System

OCS - Outer Continental Shelf

DES - Division of Ecological Services, FWS

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1. Introduction

The purpose of this manual is to provide guidance to U.S. Department of Energy (DOE) project managers for complying with the Fish and Wildlife Coordination Act (FWCA). This guidance is supplementary to , and should be used in conjunction with, the DOE Environmental Compliance Guide (DOE 1981a)* which contains flow charts outlining the basic steps involved in complying with the FWCA [Vol. I, Flow Charts III-7(a) and III-7(b)]. This guidance document describes the legislative mandate of the FWCA, explains its relationship to other environmental regulations, and presents specific procedures that will ensure compliance with the FWCA. Because environmental assessment procedures and mitigation policy play an important role in FWCA planning activities, an introduction to current procedures and policies used by the U.S. Fish and Wildlife Service (FWS) is also included in this document.

2. Background

2.1 Legislative History

The FWCA (16 U.S.C. 661, et seq., Pub. L. 85-624) is one of the oldest statements of national policy toward wildlife conservation and environmental quality (Bean 1977, Stutzman 1980, Veiluva 1981). Beginning with the Wildlife Coordination Act of 1934, Congress has expressed its intent that wildlife resources be given "equal consideration" with other features of water-related projects in which federal agencies are involved. The current version was enacted in the FWCA amendments of 1965 (Pub. L. 89-72, see Appendix). This legislation is applicable to a broad range of federal or federally permitted projects that affect water resources either directly or indirectly, including those which

- impound, divert, or otherwise alter the natural hydrology of surface or ground waters;
- construct, operate, or maintain channels or other navigation structures; or
- discharge pollutants to permanent water bodies, intermittent streams, estuaries, coastal marshes, bottomland hardwoods, swamps, or other wetlands.

Interagency Memoranda of Agreement (MOA) between the FWS, the U.S. Geological Survey, and the Bureau of Land Management have extended the applicability of FWCA to all projects "seaward to the outer margin of the continental shelf (OCS) or the fisheries conservation zone, whichever is farther" (DOI and DOC 1979). In practice, only a few energy-related projects will not qualify for FWCA coverage under these definitions. However, the Act specifically exempts from its provisions impoundments where the maximum surface area is less than 4 hectares (10 acres) and "programs primarily for land management and use carried out by federal agencies with respect to federal lands under their jurisdiction" (16 U.S.C. 662h).

Any federal agency, including DOE, that constructs a water-related project or issues a permit or license for such a project to which the Act is applicable (i.e., "action agencies") is subject to the FWCA. The Act requires that (1) consultation be carried out with the FWS and appropriate state wildlife agencies to assess project impacts on wildlife resources, and (2) project plans be modified by "justifiable means and measures" as the action agency finds should be adopted to obtain the maximum project benefits by "preventing loss of and damage to (wildlife) as well as providing for the development and improvement thereof" (16 U.S.C. 662a, b). The "wildlife resources"

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* NOTE: The FWCA flow charts in the DOE Environmental Compliance Guide are based on Proposed Rules which are unlikely to be finalized in the near future.

referred to in the FWCA are broadly defined to include "birds, fishes, mammals, and all other classes of wild animals and all types of aquatic and land vegetation upon which wildlife are dependent" (16 U.S.C. 666b). The abiotic components of habitat which are essential for the support of animal populations (e.g., clean gravel substrate for salmon spawning) can also be considered part of the "wildlife resources" protected by the FWCA (e.g., DOI and DOC 1979).

Although the FWCA has a relatively long legislative history, no final rules or regulations have been published to guide executive branch agencies such as DOE with respect to FWCA responsibilities (Bean 1977, DOI and DOC 1982). Proposed regulations were issued jointly by the U.S. Departments of the Interior and Commerce (1979, 1980) in response to President Carter's 1978 Water Policy Memorandum. However, these regulations have not been finalized and are currently being reconsidered under President Reagan's Regulatory Reform process (DOI 1981a, DOI and DOC 1982). Therefore, guidance for FWCA compliance can be based only on court interpretations of the Act and past experience. The lack of specific regulations to implement the Act and a shortage of personnel and money in the FWS has prevented the FWCA from effectively meeting its objectives (Bean 1977, GAO 1981). The current review of proposed FWCA regulations is not expected to be complete until the latter half of 1982 at the earliest. The most likely outcome from this review process is that no formal regulations defining compliance procedures are likely to be adopted in the near future. If the status quo is maintained with regard to the FWCA, DOE agencies must take the initiative for initiating, performing, and completing FWCA requirements.

2.2 Relationship to Other Environmental Regulations

The FWCA is closely associated with the National Environmental Policy Act (NEPA; Pub. L. 91-190), the U.S. Army Corps of Engineers (COE) dredge and fill program (Sect. 404 of Pub. L. 92-500 and Sects. 9 and 10 of the River and Harbor Act; DOE 1982a), and the National Pollutant Discharge Elimination System (NPDES) permit program (Sect. 402 of Pub. L. 92-500; DOE 1982b) administered by the Environmental Protection Agency (EPA). It is also related to the interagency reviews of ocean dumping permits required under the Marine Protection Research and Sanctuaries Act (Pub. L. 96-532; DOE 1982c). The interagency coordination requirements of the FWCA apply directly to DOE when the Department is a lead "action agency" constructing a water-related project, or indirectly when a DOE project must obtain a 404, NPDES, or ocean dumping permit (Fig. 1). In the latter case, COE or EPA is responsible for implementing FWCA consultations, while DOE is responsible for carrying out planning for wildlife resources before permits can be obtained. In both situations, it is to the advantage of DOE to initiate contact with FWS and to address wildlife resource concerns before permit applications are made. This approach will avoid excessive delays at later stages of project development as well as comply with the spirit of the FWCA.

DOE projects can be subject to the requirements of FWCA whether or not a formal environmental impact statement (EIS) is prepared. In cases where an EIS is prepared, many of the NEPA planning activities overlap with FWCA requirements. However, FWCA is a more narrow and, in some ways, a more specific legislative mandate than NEPA in that FWCA: (1) deals only with fish and wildlife resources rather than all environmental issues, (2) requires wildlife agencies to respond to inquiries from an action agency to evaluate the effects of projects, and (3) requires mitigation plans to be developed and implemented by the action agency (Bean 1977). Compliance with NEPA in good faith will result in consideration of all factors required by FWCA. The most efficient approach to environmental planning is to prepare EISs that include FWCA reports and mitigation plans, thereby demonstrating FWCA compliance.

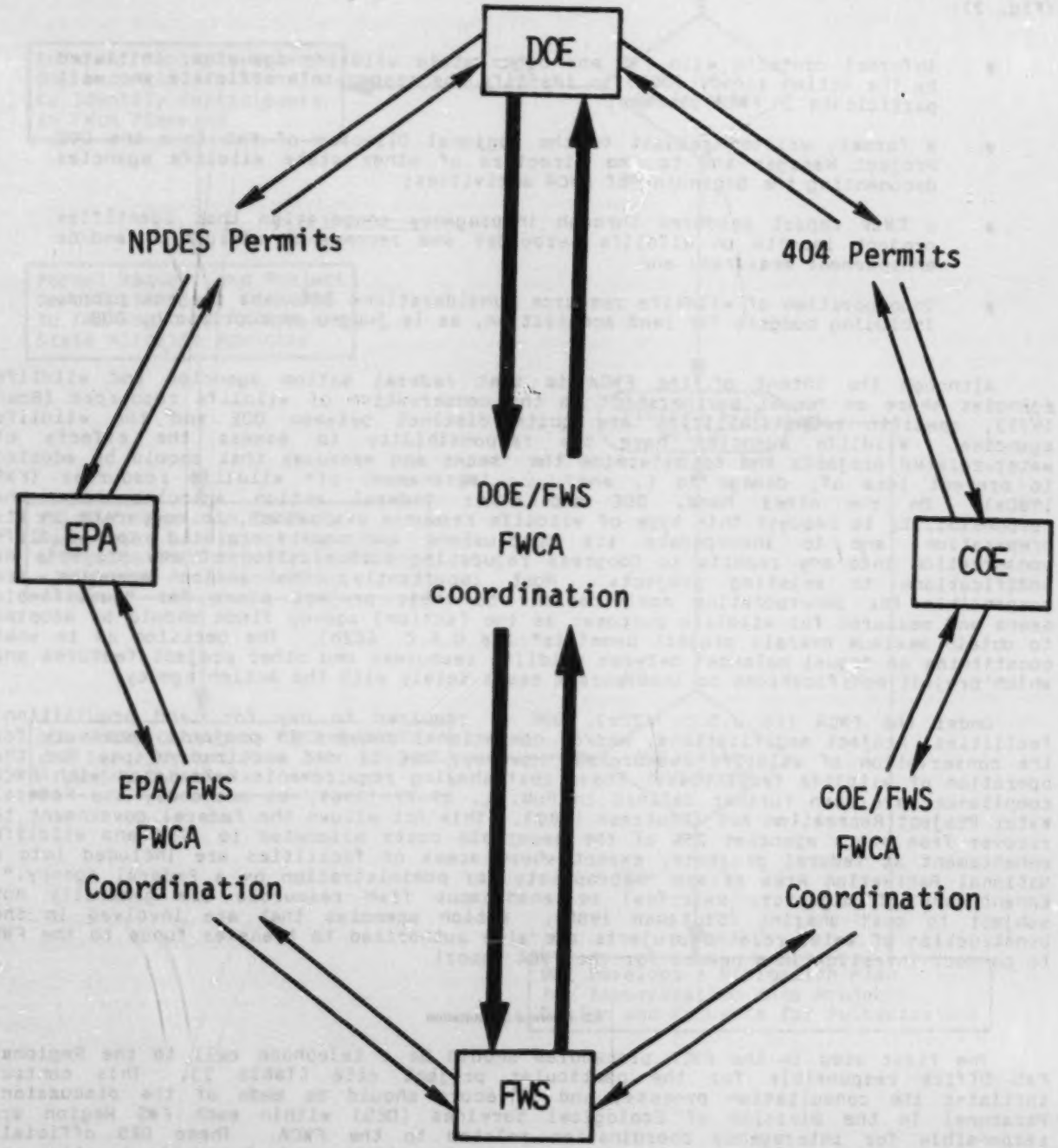

Figure 1. Interagency consultations required by the Fish and Wildlife Coordination Act.

3. Implementing the FWCA

3.1 Basic Steps and Agency Responsibilities

The procedures for complying with the FWCA can be separated into four general steps (Fig. 2):

- informal contacts with FWS and other state wildlife agencies, initiated by the action agency (DOE) to identify the responsible officials who will participate in FWCA reviews;
- a formal, written request to the Regional Director of FWS from the DOE Project Manager and to the directors of other state wildlife agencies documenting the beginning of FWCA activities;
- a FWCA report produced through interagency cooperation that identifies project impacts on wildlife resources and recommends mitigation and/or enhancement measures; and
- incorporation of wildlife resource considerations into the project plans, including budgets for land acquisition, as is judged appropriate by DOE.

Although the intent of the FWCA is that federal action agencies and wildlife agencies share an "equal partnership" in the conservation of wildlife resources (Bean 1977), specific responsibilities are quite distinct between DOE and the wildlife agencies. Wildlife agencies have the responsibility to assess the effects of water-related projects and to determine the "means and measures that should be adopted to prevent loss of, damage to [, and] ... improvement of" wildlife resources (FWS 1980a). On the other hand, DOE and other federal action agencies have the responsibility to request this type of wildlife resource evaluation, to cooperate in its preparation, and to incorporate its conclusions and costs related to wildlife conservation into any reports to Congress requesting authorization of new projects or modifications to existing projects. Most importantly, the action agencies are responsible for incorporating modifications to their project plans for "justifiable means and measures for wildlife purposes as the [action] agency finds should be adopted to obtain maximum overall project benefits" (16 U.S.C. 662b). The decision as to what constitutes an "equal balance" between wildlife resources and other project features and which project modifications to incorporate rests solely with the action agency.

Under the FWCA (16 U.S.C. 622e), DOE is required to pay for land acquisition, facilities, project modifications, and/or operational changes in projects necessary for the conservation of wildlife resources. However, DOE is not required to pay for the operation of wildlife facilities. These cost-sharing requirements associated with FWCA compliance have been further defined in Pub. L. 89-72 (1965, as amended), the Federal Water Project Recreation Act (Stutzman 1980). This Act allows the Federal government to recover from state agencies 25% of the separable costs allocated to fish and wildlife enhancement at federal projects, except where areas or facilities are included into a National Recreation Area or are "appropriate for administration by a Federal agency." Enhancement of migratory waterfowl or anadromous fish resources are generally not subject to cost sharing (Stutzman 1980). Action agencies that are involved in the construction of water-related projects are also authorized to transfer funds to the FWS to conduct investigations needed for the FWCA report.

3.2 Informal Consultation

The first step in the FWCA procedures should be a telephone call to the Regional FWS Office responsible for the particular project site (Table 1). This contact initiates the consultation process, and a record should be made of the discussion. Personnel in the Division of Ecological Services (DES) within each FWS Region are responsible for interagency coordination related to the FWCA. These DES officials should be presented with a brief, verbal description of the project and its location and should be asked for advice concerning the initiation of FWCA procedures. This type of informal consultation should be started as early as possible in project planning. For

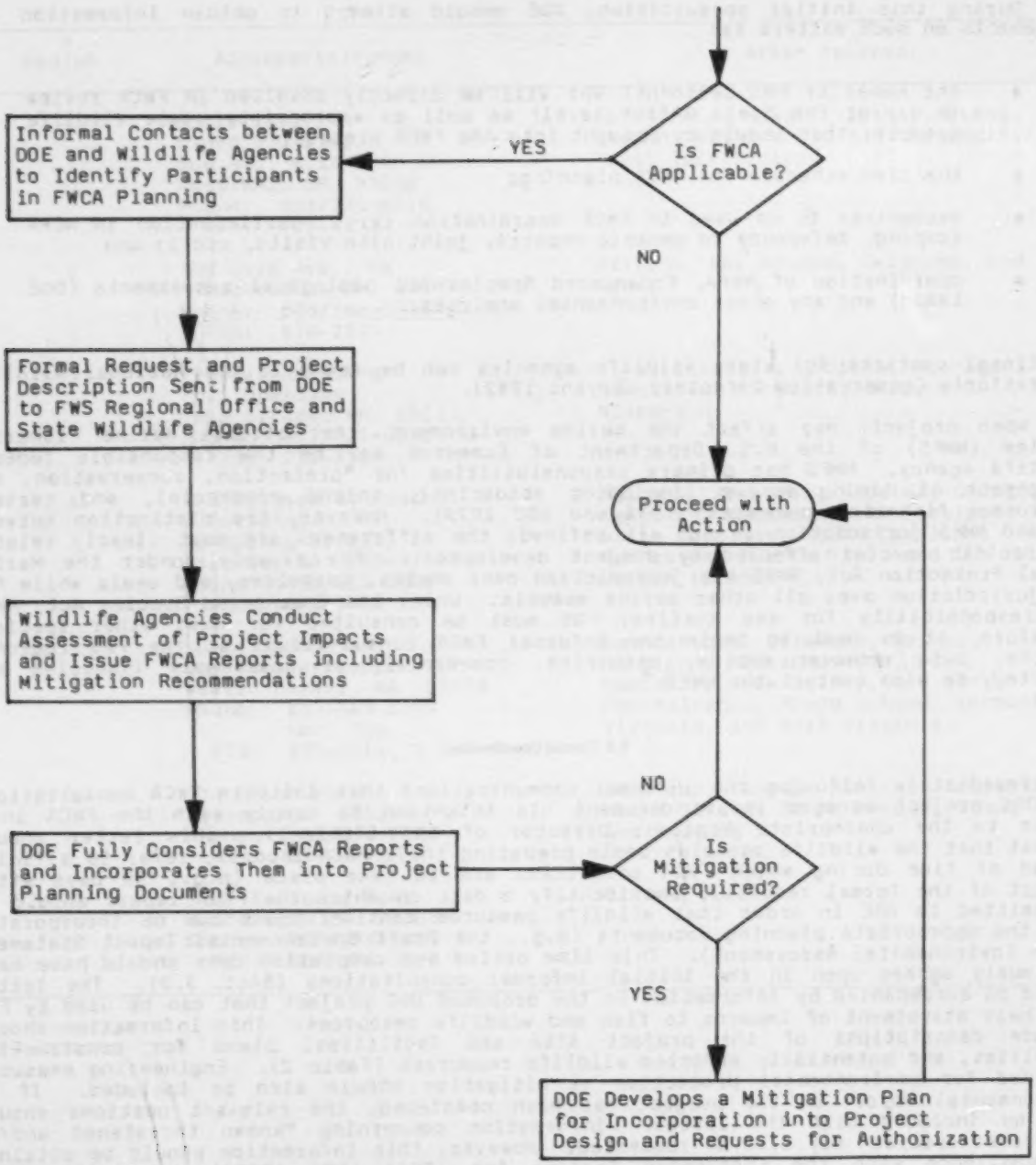
Is FWCA Applicable?
YES
Informal Contacts between DOE and Wildlife Agencies to Identify Participants in FWCA Planning
NO
Formal Request and Project Description Sent from DOE to FWS Regional Office and State Wildlife Agencies
Proceed with Action
Wildlife Agencies Conduct Assessment of Project Impacts and Issue FWCA Reports including Mitigation Recommendations
NO
DOE Fully Considers FWCA Reports and Incorporates Them into Project Planning Documents
Is Mitigation Required?
YES
DOE Develops a Mitigation Plan for Incorporation into Project Design and Requests for Authorization

Figure 2. FWCA planning activities

projects requiring the preparation of a formal EIS, the first step in FWCA compliance should occur well before the EIS scoping process begins.

During this initial consultation, DOE should attempt to obtain information and agreements on such matters as:

- the names of FWS personnel who will be directly involved in FWCA review (e.g., at the Field Office level) as well as appropriate state wildlife agencies that should be brought into the FWCA process;
- the time schedule for FWCA planning;
- mechanisms to be used in FWCA coordination (e.g., participation in NEPA scoping, reference to generic reports, joint site visits, etc.); and
- coordination of NEPA, Endangered Species Act biological assessments (DOE 1982d) and any other environmental analyses.

Additional contacts for state wildlife agencies can be found in the National Wildlife Federation's Conservation Directory (Bryant 1982).

When projects may affect the marine environment, the National Marine Fisheries Service (NMFS) of the U.S. Department of Commerce may be the responsible federal wildlife agency. NMFS has primary responsibilities for "protection, conservation, and management of living marine (including estuarine), inland commercial, and certain anadromous fisheries resources" (DOI and DOC 1979). However, the distinction between FWS and NMFS jurisdiction is not all defined; the differences are most clearly related to specific species affected by project development. For example, under the Marine Mammal Protection Act, NMFS has jurisdiction over whales, porpoises, and seals while FWS has jurisdiction over all other marine mammals. Under the Endangered Species Act, NMFS has responsibility for sea turtles; FWS must be consulted for most other species. Therefore, it is best to begin the informal FWCA consultations at the FWS regional offices, but, whenever marine, estuarine, commercial, or anadromous fisheries are affected, to also contact the NMFS.*

3.3 Formal Coordination

Immediately following the informal communications that initiate FWCA consultation, the DOE project manager should document his intention to comply with the FWCA in a letter to the appropriate Regional Director of FWS (Table 1). This letter should request that the wildlife agencies begin preparing their FWCA reports, refer to a finite period of time during which FWCA activities are to take place (e.g., 90 days after receipt of the formal request), and identify a date on which the FWCA report should be transmitted to DOE in order that wildlife resource considerations can be incorporated into the appropriate planning documents (e.g., the Draft Environmental Impact Statement or an Environmental Assessment). This time period and completion date should have been previously agreed upon in the initial informal consultations (Sect. 3.2). The letter should be accompanied by information on the proposed DOE project that can be used by FWS for their assessment of impacts to fish and wildlife resources. This information should include descriptions of the project site and facilities, plans for construction activities, and potentially affected wildlife resources (Table 2). Engineering measures intended for environmental protection or mitigation should also be included. If an Environmental Report on the project has been completed, the relevant portions should also be included with the letter. Information concerning "known threatened and/or endangered species" may also be requested. However, this information should be obtained in compliance with the Endangered Species Act (ESA) (DOE 1982d). Activities for complying with the ESA and FWCA should be scheduled within the same time frame, early in project planning.

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*For the remainder of this document, all references to FWS should be read "FWS and/or NMFS", if appropriate.

Table 1. U.S. Fish and Wildlife Service Regional Offices

Region	Address/telephone	Areas covered
1	Suite 1692 Lloyd 500 Bldg. 500 N.E. Multnomah St. Portland, OR 97232 Phone: 503/231-6118 FTS: 429-6131	California, Hawaii, Idaho, Nevada, Oregon, Washington, and the Pacific Trust Territories
2	500 Gold Ave., SW Albuquerque, NM 87103 Phone: 505/766-2321 FTS: 474-2321	Arizona, New Mexico, Oklahoma, and Texas
3	Federal Building Fort Snelling Twin Cities, MN 55111 Phone: 612/725-3593 FTS: 725-3500	Iowa, Illinois, Indiana, Michigan, Minnesota, Missouri, Ohio, and Wisconsin
4	The Richard B. Russell Building 75 Spring Street, SW Atlanta, GA 30303 Phone: 404/221-3588 FTS: 242-3588	Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, and the Virgin Islands
5	Suite 700 One Gateway Center Newton Corner, MA 02158 Phone: 617/965-5100 ext. 316 FTS: 829-9316, 7 8	Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia
6	134 Union Blvd. Denver, CO 80225 Phone: 303/234-2209 FTS: 234-2496	Colorado, Kansas, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming
7	1101 E. Tudor Road Anchorage, AK 99503 Phone: 907/276-3800 FTS: 907/276-3800	Alaska

Table 2. Information required to assess impacts to fish and wildlife as specified by DOI (1975a,b) and the FWCA

I. Overall map (based on a U.S. Coast and Geodetic navigation chart or Geological Survey quadrangle map) showing project location in relation to:

   A. Water depths at and in the vicinity of the proposed project.

   B. Direction of sheetflow in wetland areas and of water currents in river and coastline areas, and duration and amplitude of ebb and flood tides in estuarine and bay areas.

   C. Location of freshwater outflows, including surface drainageways, streams, aquifers, and springs where known or identified within the area of project influence.

   D. Location of shellfish lease areas within the area of project influence.

II. Aerial photograph of project area, if available.

III. Scale drawings and project area maps showing proposed works in relation to ordinary high water, mean high or mean of the higher high water, and ordinary low water, mean low or mean of the lower low water elevations and lines (as locally proper and where technologically possible), and the following detailed information:

   A. A description of methods and kinds of equipment to be used, means of access to activity sites, proposed geophysical operations, and duration and season of activities.

   B. Types, locations, and dimensions, including vertical cross sections of shallow water and wetland areas to be excavated and/or filled (e.g., canals, channels, roadways, fill and spoil areas, and dikes).

   C. Details of all planned facilities where construction or operation could alter or disturb shallow waters and wetlands.

IV. For purposes of environmental protection:

   A. Information known by DOE concerning threatened and/or endangered species, including their associated habitats in the area of project influence.

   B. Plans for maintenance of natural drainage patterns and freshwater-saltwater exchanges in waters and wetlands (i.e., prevention of unnatural saltwater or freshwater intrusion and dewatering of wetlands).

   C. Plans for minimization of erosion, sedimentation, and turbidity, including stabilization of construction sites.

   D. Other plans or measures to prevent or minimize losses of fish and wildlife, public utilization, and other environmental values, including special construction and operations procedures.

V. Description of releases of "domestic sewage, mine, petroleum, and industrial wastes, erosion silt, and other polluting substances" in effluents from the proposed project, including:

   A. Location of point-source effluents and areas of non-point source surface or subsurface runoff from the project site.

   B. Timing of releases of pollutants during construction, normal operating conditions, or potential accidental releases.

   C. Best available description of the chemical composition of the various effluents from the project.

VI. Names, addresses, and telephone numbers of the DOE project manager and other DOE project liason personnel.

3.4 Reporting Procedures

The FWCA report produced by wildlife agencies (i.e., FWS and/or state agencies) can take various forms, depending on the assessment resources available to them and the magnitude of the proposed project. Contents of the FWCA report should include "site-specific project impacts, measures necessary to minimize harm, and/or recommended project alternatives" (FWS 1980a). Although FWS is required to be "as specific as is practicable," resource limitations within the FWS often are the major obstacle to a successful FWCA review process (GAO 1981). Stutzman (1980) presented a comprehensive list of contents of an FWCA report (Table 3). It is important for DOE to incorporate the findings of FWCA reports, whether they are "no comment" or detailed assessments, into project planning documents to establish an administrative record of FWCA compliance. The FWCA reports can be placed in an appendix to any required DOE EIS, along with those mitigation measures adopted by DOE (e.g., Appendix E in DOE 1981b).

3.5 Responding to the FWCA Report

After receipt of the FWCA reports, DOE must decide which of the wildlife conservation recommendations can be "justifiably" incorporated into project plans. These decisions should be made carefully and should be defensible because they may be subject to judicial review. Although no specific criteria have been adopted for selecting wildlife conservation measures, the proposed FWCA rules (DOI and DOC 1980) recommend that the findings of the action agency include:

- a summary of measures that will be necessary to compensate for wildlife resources lost;
- the degree to which selected alternatives will compensate for loss of wildlife resources;
- a justification for the tradeoffs made between wildlife resources and other project features; and
- an identification of any remaining, unresolved differences between the action and wildlife agencies.

These findings should be included in any authorization or requests for project approval to Congress, as well as in a public document such as an EIS or a notice in the Federal Register if no EIS is to be issued. If an impact statement is required at a state level, plans for wildlife conservation should also be documented in it.

4. Wildlife Resource Evaluation

4.1 The Role of Habitat Values

Habitat evaluation techniques developed by FWS are rapidly becoming the most important quantitative tool for carrying out the type of environmental impact assessments required in FWCA planning. Habitat is defined here as those physical, chemical, and biological characteristics of the environment that supply the food, cover, and other survival requirements of a particular species (FWS 1980c). Habitat values provide a basis for evaluating project impacts and alternative designs in non-monetary terms, thus avoiding questionable estimates of the dollar value of fish and wildlife. The manner in which project development will affect these habitat components is often easier to predict than are the impacts to other ecosystem attributes used in environmental assessment (i.e., estimates of changes in populations or "biological integrity"). Habitat evaluation usually involves significantly less time and expense than do other assessment methods. Therefore, assessments based on habitat value are frequently preferred by wildlife agencies. The existing FWCA legislation does not specify any particular assessment method, but internal guidelines of the FWS, as well as the proposed FWCA regulations, place a strong emphasis on measuring habitat values.

Table 3. Suggested contents of a FWCA report (Stutzman 1980)

1)	A summary of the investigations, findings, and conclusions including (for Federal and major licensed projects) some level of inventory and geographic delineation of existing and projected resource values, particularly of those resources likely to be affected by the project, either directly or indirectly;
2)	Assessment methods, assumptions, and pertinent data;
3)	A statement of wildlife problems and needs, including human needs, and a statement of wildlife planning goals (especially for Federal projects);
4)	Positive and negative effects of projects and alternative project proposals and needed conservation features for each, with particular emphasis on the project alternative to be selected for recommendation, if known;
5)	Further studies needed for accurate evaluation of effects;
6)	The dollar costs of all means and measures recommended (for Federal and Federally licensed projects) to the extent possible;
7)	The results expected in terms of dollar benefits for recommended enhancement measures (for federal projects, dollar benefits and costs are allocated to the various project objectives affected by project development). Reports on licensed or permitted projects should also include such factors when easily obtained and if such information would serve a useful purpose;
8)	The results expected in non-dollar terms for mitigatory measures, particularly. These measures would be displayed (or reflected) in the Environmental Quality (EQ) Account prescribed by the WRC Principles and Standards;
9)	Any alternative mitigation schemes, with their costs and results.

Since 1974, the Division of Ecological Services of FWS has been developing an assessment system called the Habitat Evaluation Procedures (HEP) (FWS 1980b,c). These procedures and the Mitigation Policy of FWS (Sect. 4.2) that is based on habitat values are likely to be applied by FWS regardless of the adoption of new FWCA regulations. The basic approach used in HEP is to measure habitat values in terms of Habitat Units (HU) which are a composite index of both the quantity (physical area) and quality (suitability for wildlife use) of sites affected by project development.

$$HU = HSI \cdot Area,$$

where HSI is the habitat suitability index (a dimensionless parameter between 0.0 and 1.0), and area is the total area affected by the project.

The HU index is calculated on a species-specific basis by making the values of HSI represent the habitat requirements for individual evaluation species (ES). An ES can be a single target species, the most sensitive life stage of a target species, or a group of species (guild) with similar habitat requirements.

The HEP analyses are carried out by an an interagency planning team composed of representatives of the FWS, the appropriate state fish and wildlife agency, DOE, and/or other project sponsors. Application of HEP consists of three steps: (1) defining a study area (i.e., specifying the habitat types to be affected by project development); (2) selecting one or more evaluation species that are of high public interest, economic value, and/or ecological significance; and (3) specifying the critical physical/chemical/biological components of habitat for each evaluation species within each habitat type to be affected. The effort devoted to data acquisition for building HSI models or measuring the important habitat components can vary depending on resources available for HEP assessments. Smaller projects may not justify formal application of HEP, but may use similar, less rigorous habitat evaluation approaches to comply with the FWCA. The DOE project manager should be prepared to assign personnel to HEP teams whenever FWCA is applicable. The DOE representative on an HEP team plays an important role in voicing DOE's views and mitigation capabilities.

The validity of HEP in assessing project alternatives is highly dependent on selection of evaluation species that are representative of a project site and that have well-defined HSIs. FWS has developed HSI functions from existing data for at least 21 fish, 6 reptiles and amphibians, 15 mammals, and 32 bird species (Table 4), but special attention should always be paid to selecting HSI functions that are representative of the site-specific habitat requirements of evaluation species and not simply expedient (i.e., don't use an HSI model simply because it is available). Selection of appropriate species and HSI functions should be agreed upon by concensus of the HEP team members. This agreement is best made after a joint site visit by all interested participants early in the FWCA planning activities. Detailed guidance for applying HEP is provided in a series of FWS manuals (FWS 1980b,c,d,e; 1981). Once HUs have been calculated for all affected areas, these indices of habitat condition can be used in evaluating the degree of project impact as well as the tradeoffs that are required and feasible for conserving wildlife resources. An extension of HEP is also available called Human Use and Economic Evaluation (HUEE) that allows for estimation of human uses of wildlife resources and the dollar values of these uses based on initial habitat evaluations (FWS 1980e).

4.2 FWS Mitigation Policy

On January 23, 1981, the FWS published a Nctice of Final Policy concerning its mitigation planning goals and policies toward projects affecting fish and wildlife resources (DOI 1981b). This guidance was directed primarily at FWS personnel, but other federal agencies, such as DOE, will find it useful in anticipating FWS recommendations, planning for mitigation needs, and avoiding unnecessary conflicts or project delays.

The rationale for the FWS's mitigation policy is that different types (i.e., quality) of wildlife resources warrant different degrees of protection and mitigation (Table 5). This policy is directed at compensating for habitat lost as a result of project development and, therefore, does not apply to threatened or endangered species

Table 4. Common names of potential evaluation species for which Species Summaries and Habitat Suitability Indices (HSIs) are available. (Contact: Habitat Evaluation Group, Western Energy and Land Use Team, U.S. Fish and Wildlife Service, 2625 Redwing Rd., Fort Collins, CO 80526, FTS: 323-5421).

FISH	REPTILES/AMPHIBIANS	BIRDS
Black bullhead	Bullfrog	Green heron
Black crappie	Central newt	Wood duck
Bluegill	Eastern box turtle	Blue-winged teal
Carp	Eastern yellow-bellied racer	Cooper's hawk
Central mudminnow	Snapping turtle	Red-tailed hawk
Channel catfish	Wood frog	Broad-winged hawk
Creek chub		American kestrel
Cutthroat trout		Ruffed grouse
Green sunfish		Bobwhite
Largemouth bass		Turkey
Northern hogsucker	MAMMALS	American woodcock
Rainbow trout		Mourning dove
Redear sunfish	Beaver	Great horned owl
Slough darter	Bobcat	Barred owl
Smallmouth bass	Eastern cottontail	Belted kingfisher
Spotted bass	Eastern woodrat	Downy woodpecker
Spotted sunfish	Fox squirrel	Indigo bunting
Striped bass	Gray squirrel	Field sparrow
Warmouth	Meadow vole	Hairy woodpecker
White crappie	Mink	Common flicker
White sucker	Moose	Scissor-tailed flycatcher
	Muskrat	Carolina chickadee
	Raccoon	Black-capped chickadee
	Red squirrel	White-breasted nuthatch
	Snowshoe hare	Long-billed marsh wren
	Southern red-backed vole	Wood thrush
	White-tailed deer	Veery
		Pine warbler
		Yellow warbler
		Northern waterthrush
		Eastern meadowlark
		Red-winged blackbird

Table 5. Habitat Preservation Criteria of the FWS Mitigation Policy (DOI 1981d)

Wildlife habitat category	Definition[1]	Mitigation[2] goal	Recommendation guidance
I	Habitat of high value for ES; unique and irreplaceable on national or ecoregional basis	No loss of existing habitat value	Prevent all loss of habitat value
II	Habitat of high value for ES; scarce or becoming scarce on national or ecoregional basis	No net loss of In-kind habitat value	Recommend ways to avoid or minimize losses; compensate with replacement of equivalent habitat
III	Habitat of high to medium value for ES; relatively abundant on national basis	No net loss of habitat value and minimization of loss of In-kind habitat value	Recommend mitigation measures but allow for substitution of different habitat types if they are of sufficiently high quality
IV	Habitat of medium or low value for ES	Minimize habitat loss	Substitution of different habitat types acceptable; shift in fish and wildlife populations acceptable

[1]An evaluation species (ES) is a target species selected for impact analysis based on high public interest, economic value, and/or broader ecological significance. See the Mitigation Policy for specific definitions.

[2]In-kind habitat requires substitute resources to be "physically and biologically the same or closely approximating those lost."

(covered by the ESA) or to objectives (net environment) for enhancement of wildlife resources (e.g., creating a new fishery or waterfowl hunting area) (46 FR 7656, January 23, 1981), wherever enhancement is possible. In implementing this policy, FWS personnel use the HEP techniques (Sect. 4.1) to determine the type and amount of habitat that should be considered. Because the HEP techniques will be used to evaluate habitat loss and needs for mitigation, DOE managers should be aware of the effect the following elements of the HEP considerations have on mitigation recommendations. These elements are:

- evaluation species selected for impact assessment,
- the existing habitat value of the various areas affected by DOE project development, and
- the uniqueness and importance of the habitat types affected by project development on a national or ecoregional level.

The policy of the FWS is to provide the greatest protection to high quality and unique habitat types so that adverse impacts to important fish and wildlife resources can be avoided. Compensation for loss or disturbance of habitat that is considered to be of lower quality or not to be unique may be accomplished by purchase and/or development of equivalent habitat-type either on or off the project site.

The overall objective of FWCA activities is to find an "optimal" project development plan that can incorporate both wildlife resource protection and development of the nation's natural resources. A DOE project manager should be willing to discuss acceptable habitat tradeoffs with the FWS. Reasonable proposals by DOE for replacing lost fish and wildlife habitat are most likely to be acceptable to FWS if "good-faith" negotiations are maintained throughout project planning.

5. Summary and Conclusions

The FWCA was an important first step in the evolution of national environmental policy. It is an Act which has been only partially successful in satisfying its original purpose because (1) no consistent regulations for its implementation have been adopted, and (2) it has been overshadowed by other environmental legislation, such as NEPA. In the future, as NEPA compliance procedures are streamlined, the FWCA may become more important in terms of the specific environmental planning requirements it places on federal agencies (Veiluva 1981). Finalization of the proposed FWCA regulations would place an increased emphasis in this direction.

This guidance manual addresses the current status for FWCA compliance. Until such time as final regulations are adopted or a Memorandum of Agreement is established between DOI and DOE, the best strategy for FWCA compliance is to consult with FWS personnel throughout the project planning process, documenting these interactions as they occur.

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Appendix

Fish and Wildlife Coordination Act

(16 U.S.C. 661-666c; P.L. 85-624, August 12, 1958; Amended by P.L. 89-72, July 9, 1965)

§661. Declaration of purpose; cooperation of agencies; surveys and investigations; donations.

For the purpose of recognizing the vital contribution of our wildlife resources to the Nation, the increasing public interest and significance thereof due to expansion of our national economy and other factors, and to provide that wildlife conservation shall receive equal consideration and be coordinated with other features of water-resource development programs through the effectual and harmonious planning, development, maintenance, and coordination of wildlife conservation and rehabilitation for the purposes of sections 661-666c of this title in the United States, its Territories and possessions, the Secretary of the Interior is authorized (1) to provide assistance to, and cooperate with, Federal, State, and public or private agencies and organizations in the development, protection, rearing, and stocking of all species of wildlife, resources thereof, and their habitat, in controlling losses of the same from disease or other causes, in minimizing damages from overabundant species, in providing public shooting and fishing areas, including easements across public lands for access thereto, and in carrying out other measures necessary to effectuate the purposes of said sections; (2) to make surveys and investigations of the wildlife of the public domain, including lands and waters or interests therein acquired or controlled by any agency of the United States; and (3) to accept donations of land and contributions of funds in furtherance of the purposes of said sections.

§662. Impounding, diverting, or controlling of waters

(a) Consultations between agencies

Except as hereafter stated in subsection (h) of this section, whenever the waters of any stream or other body of water are proposed or authorized to be impounded, diverted, the channel deepened, or the stream or other body of water otherwise controlled or modified for any purpose whatever, including navigation and drainage, by any department or agency of the United States, or by any public agency under Federal permit or license, such department or agency first shall consult with the United States Fish and Wildlife Service, Department of the Interior, and with the head of the agency exercising administration over the wildlife resources of the particular State wherein the impoundment, diversion, or other control facility is to be constructed, with a view to the conservation of wildlife resources by preventing loss of and damage to such resources as well as providing for the development and improvement thereof in connection with such water-resource development.

(b) Reports and recommendations; consideration

In furtherance of such purposes, the reports and recommendations of the Secretary of the Interior on the wildlife aspects of such projects, and any report of the head of the State agency exercising administration over the wildlife resources of the State, based on surveys and investigations conducted by the United States Fish and Wildlife Service and such State agency for the purpose of determining the possible damage to wildlife resources and for the purpose of determining means and measures that should be adopted to prevent the loss of or damage to such wildlife resources, as well as to provide concurrently for the development and improvement of such resources, shall be made an integral part of any report prepared or submitted by any agency of the Federal Government responsible for engineering surveys and construction of such projects when such reports are presented to the Congress or to any agency or person having the authority or the power, by administrative action or otherwise, (1) to authorize the construction of water-resource development projects or (2) to approve a report on the modification or supplementation of plans for previously

authorized projects, to which sections 661-666c of this title apply. Recommendations of the Secretary of the Interior shall be as specific as is practicable with respect to features recommended for wildlife conservation and development, lands to be utilized or acquired for such purposes, the results expected, and shall describe the damage to wildlife attributable to the project and the measures proposed for mitigating or compensating for these damages. The reporting officers in project reports of the Federal agencies shall give full consideration to the report and recommendations of the Secretary of the Interior and to any report of the State agency on the wildlife aspects of such projects, and the project plan shall include such justifiable means and measures for wildlife purposes as the reporting agency finds should be adopted to obtain maximum overall project benefits.

(c) Modification of projects; acquisition of lands

Federal agencies authorized to construct or operate water-control projects are authorized to modify or add to the structures and operations of such projects, the construction of which has not been substantially completed on the date of enactment of the Fish and Wildlife Coordination Act, and to acquire lands in accordance with section 663 of this title, in order to accommodate the means and measures for such conservation of wildlife resources as an integral part of such projects: Provided, That for projects authorized by a specific Act of Congress before the date of enactment of the Fish and Wildlife Coordination Act (1) such modification or land acquisition shall be compatible with the purposes for which the project was authorized; (2) the cost of such modifications or land acquisition, as means and measures to prevent loss of and damage to wildlife resources to the extent justifiable, shall be an integral part of the cost of such projects; and (3) the cost of such modifications or land acquisition for the development or improvement of wildlife resources may be included to the extent justifiable, and an appropriate share of the cost of any project may be allocated for this purpose with a finding as to the part of such allocated cost, if any, to be reimbursed by non-Federal interests.

(d) Project costs

The cost of planning for and the construction or installation and maintenance of such means and measures adopted to carry out the conservation purposes of this section shall constitute an integral part of the cost of such projects: Provided, That such cost of attributable to the development and improvement of wildlife shall not extend beyond that necessary for (1) land acquisition, (2) facilities as specifically recommended in water resource project reports, (3) modification of the project, and (4) modification of project operations, but shall not include the operation of wildlife facilities.

(e) Transfer of funds

In the case of construction by a Federal agency, that agency is authorized to transfer to the United States Fish and Wildlife Service, out of appropriations or other funds made available for investigations, engineering, or construction, such funds as may be necessary to conduct all or part of the investigations required to carry out the purposes of this section.

(f) Estimation of wildlife benefits or losses

In addition to other requirements, there shall be included in any report submitted to Congress supporting a recommendation for authorization of any new project for the control or use of water as described herein (including any new division of such project or new supplemental works on such project) an estimation of the wildlife benefits or losses to be derived therefrom including benefits to be derived from measures recommended specifically for the development and improvement of wildlife resources, the cost of providing wildlife benefits (including the cost of additional facilities to be installed or lands to be acquired specifically for that particular phase of wildlife conservation relating to the development and improvement of wildlife), the part of the cost of joint-use facilities allocated to wildlife, and the part of such costs, if any, to be reimbursed by non-Federal interests.

(g) Applicability to projects

The provisions of this section shall be applicable with respect to any project for the control or use of water as prescribed herein, or any unit of such project authorized before or after the date of enactment of the Fish and Wildlife Coordination Act for planning or construction, but shall not be applicable to any project or unit thereof authorized before the date of enactment of the Fish and Wildlife Coordination Act if the construction of the particular project or unit thereof has been substantially completed. A project or unit thereof shall be conisdered to be substantially completed when sixty percent or more of the estimated construction cost has been obligated for expenditure.

(h) Exempt projects and activities

The provisions of sections 661-666c of this title shall not be applicable to those projects for the impoundment of water where the maximum surface area of such impoundments is less than ten acres, nor to activities for or in connection with programs primarily for land management and use carried out by Federal agencies with respect to Federal lands under their jurisdiction.

§663. Impoundment or diversion of waters

(a) Conservation, maintenance, and management of wildlife resources; development and improvement

Subject to the exceptions prescribed in section 662(h) of this title, whenever the waters of any stream or other body of water are impounded, diverted, the channel deepened, or the stream or other body of water otherwise controlled or, modified for any purpose whatever, including navigation and drainage, by any department or agency of the United States, adequate provision, consistent with the primary purposes of such impoundment, diversion, or other control, shall be made for the use thereof, together with any areas of land, water, or interests therein, acquired or administered by a Federal agency in connection therewith, for the conservation, maintenance, and management of wildlife resources thereof, and its habitat thereon, including the development and improvement of such wildlife resources pursuant to the provisions of section 662 of this title.

(b) Use and availability of waters, land or interests therein

The use of such waters, land or interests therein for wildlife conservation purposes shall be in accordance with general plans approved jointly (1) by the head of the particular department or agency exercising primary administration in each instance, (2) by the Secretary of the Interior, and (3) by the head of the agency exercising the administration of the wildlife resources of the particular State wherein the waters and areas lie. Such waters and other interests shall be made available, without cost of administration, by such State agency, if the management of the properties relate to the conservation of wildlife other than migratory birds, or by the Secretary of the Interior, for administration in such manner as he may deem advisable, where the particular properties have value in carrying out the national migratory bird management program: Provided, That nothing in this section shall be construed as affecting the authority of the Secretary of Agriculture to cooperate with the States or in making lands available to the States with respect to the management of wildlife and wildlife habitat on lands administered by him.

(c) Acquisition of land, waters, and interests therein; report to Congress

When consistent with the purposes of sections 661-666c of this title and the reports and findings of the Secretary of the Interior prepared in accordance with section 662 of this title, land, waters, and interests therein may be acquired by Federal construction agencies for the wildlife conservation and development purposes of sections 661-666c of this title in connection with a project as reasonably needed to preserve and assure for the public benefit the wildlife potentials of the particular project area: Provided, That before properties are acquired for this purpose, the probable extent of such acquisition shall be set forth, along with other data necessary for project authorization, in a report submitted to the Congress, or in the case of a project previously authorized, no such properties shall be

acquired unless specifically authorized by Congress, if specific authority for such acquisition is recommended by the construction agency.

(d) Use of acquired properties

Properties acquired for the purposes of this section shall continue to be used for such purposes, and shall not become the subject of exchange or other transactions if such exchange or other transaction would defeat the initial purpose of their acquisition.

(e) Availability of Federal lands acquired or withdrawn for Federal water-resources purposes

Federal lands acquired or withdrawn for Federal water-resource purposes and made available to the States or to the Secretary of the Interior for wildlife management purposes, shall be made available for such purposes in accordance with sections 661-666c of this title, notwithstanding other provisions of law.

(f) National forest lands

Any lands acquired pursuant to this section by any Federal agency within the exterior boundaries of a national forest shall, upon acquisition, be added to and become national forest lands, and shall be administered as a part of the forest within which they are situated, subject to all laws applicable to lands acquired under the provisions of the Act of March 1, 1911 (36 Stat. 961), unless such lands are acquired to carry out the National Migratory Bird Management Program.

§664. Administration; rules and regulations; availability of lands to State agencies

Such areas as are made available to the Secretary of the Interior for the purposes of sections 661-666c of this title, pursuant to sections 661 and 663 of this title or pursuant to any other authorization, shall be administered by him directly or in accordance with cooperative agreements entered into pursuant to the provisions of section 661 of this title and in accordance with such rules and regulations for the conservation, maintenance, and management of wildlife, resources thereof, and its habitat thereon, as may be adopted by the Secretary in accordance with general plans approved jointly by the Secretary of the Interior and the head of the department or agency exercising primary administration of such areas: Provided, That such rules and regulations, shall not be consistent with the laws for the protection of fish and game of the states in which such area is situated: Provided further, That lands having value to the National Migratory Bird Management Program may, pursuant to general plans, be made available without cost directly to the State agency having control over wildlife resources, if it is jointly determined by the Secretary of the Interior and such State agency that this would be in the public interest: And provided further, That the Secretary of the Interior shall have the right to assume the management and administration of such lands in behalf of the National Migratory Bird Management Program if the Secretary finds that the State agency has withdrawn from or otherwise relinquished such management and administration.

§665. Investigations as to effect of sewage, industrial wastes; reports

The Secretary of the Interior, through the Fish and Wildlife Service and the Bureau of Mines, is authorized to make such investigations as he deems necessary to determine the effects of domestic sewage, mine, petroleum, and industrial wastes, erosion silt, and other polluting substances on wildlife, and to make reports to the Congress concerning such investigations and of recommendations for alleviating dangerous and undesirable effects of such pollution. These investigations shall include (1) the determination of standards of water quality for the maintenance of wildlife; (2) the study of methods of abating and preventing pollution, including methods for the recovery of useful or marketable products and byproducts of wastes; and (3) the collation and distribution of data on the progress and results of such investigations for the use of Federal, State, municipal, and private agencies, individuals, organizations, or enterprises.

§665a. Maintenance of adequate water levels in upper Mississippi River

In the management of existing facilities (including locks, dams, and pools) in the Mississippi River between Rock Island, Illinois, and Minneapolis, Minnesota, administered by the United States Corps of Engineers of the Department of the Army, that Department is directed to give full consideration and recognition to the needs of fish and other wildlife resources and their habitat dependent on such waters, without increasing additional liability to the Government, and, to the maximum extent possible without causing damage to levee and drainage districts, adjacent railroads and highways, farm lands, and dam structures, shall generally operate and maintain pool levels as though navigation was carried on throughout the year.

§666. Authorization of Appropriations

There is authorized to be appropriated from time to time, out of any money in the Treasury not otherwise appropriated, such amounts as may be necessary to carry out the provisions of sections 661-666c of this title and regulations made pursuant thereto, including the construction of such facilities, buildings, and other improvements necessary for economical administration of areas made available to the Secretary of the Interior under said sections, and the employment in the city of Washington and elsewhere of such persons and means as the Secretary of the Interior may deem necessary for such purposes.

§666a. Penalties

Any person who shall violate any rule or regulation promulgated in accordance with sections 661-666c of this title shall be guilty of a misdemeanor and upon conviction thereof shall be fined not more than $500 or imprisoned for not more than one year, or both.

§666b. Definitions

The terms "wildlife" and "wildlife resources" as used herein include birds, fishes, mammals, and all other classes of wild animals and all types of aquatic and land vegetation upon which wildlife is dependent.

§666c. Applicability to Tennessee Valley Authority

The provisions of sections 661-666b of this title shall not apply to the Tennessee Valley Authority.

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